

CLAIMS:

1. An inductor comprising:
a plurality of windings, each one of the windings having a center, wherein each one of the
5 windings of the plurality of windings has a different size compared to the other windings, the
center of each one of the windings of the plurality of windings substantially coincides with the
center of the other windings of the plurality of windings; and

at least a first conductor crossover conductively connecting one winding of the plurality
of windings with another winding of the plurality of windings.

10

2. The inductor of claim 1 further comprising a second conductor crossover associated with
at least one of said plurality of windings for conductively connecting at least one of said plurality
of windings with yet another one of the plurality of windings, wherein the first and second
conductor crossovers are disposed so as to preserve a symmetry of the inductor about an axis
15 intersecting both the first and second conductor crossovers and the centers of the windings.

3. The inductor of claim 2 wherein the plurality of windings includes:
at least a relatively larger winding having a first portion and a second portion thereof;
at least a relatively smaller winding having a first portion and a second portion thereof;

20 and

wherein the conductor crossovers each comprising a first conductor and a second
conductor, the conductor crossover conductively connecting the relatively larger winding and the
relatively smaller winding, wherein the first portion of the relatively larger winding is
conductively connected to the second portion of the relatively smaller winding by the first
25 conductor, and the first portion of the relatively smaller winding is conductively connected to the
second portion of the relatively larger winding by the second conductor.

4. The inductor of claim 3, further comprising a first terminal and a second terminal, wherein the first terminal is conductively connected to the first portion of the relatively larger winding, and the second terminal is conductively connected to the second portion of the relatively larger winding.

5

5. The inductor of claim 4, further comprising a outer peripheral conductor, a size of the outer peripheral conductor being greater than the size of said relatively larger winding, wherein the center of said relatively larger winding and the center of the peripheral conductor substantially coincide, whereby the peripheral conductor is disposed outwardly of a periphery of 10 the relatively larger winding and the outer peripheral conductor being generally symmetric with said relatively larger winding.

15 6. The inductor of claim 5, wherein the outer peripheral conductor defines a shape comprising an open curve, the open curve having a first end point and a second end point, the outer peripheral conductor further comprising a first ground terminal connected to the first end point and a second ground terminal connected to the second end point.

7. The inductor of claim 6, wherein the windings have a circular shape.

20 8. The inductor of claim 6, wherein the windings have a polygonal shape.

9. The inductor of claim 6, wherein the plurality of windings and the outer peripheral conductor are all co-planarly disposed on a substrate.

25 10. The inductor of claim 2 wherein the plurality of windings comprises:
an outer winding having a first portion and a second portion thereof, the size of the outer winding being greater than the size of the other windings;

an inner winding having a first portion and a second portion thereof, the size of the inner winding being smaller than the size of the other windings;

at least one middle winding having a first portion and a second portion thereof, a size of the at least one middle winding being smaller than the size of the outer winding and bigger than the size of the inner winding; and

5 a plurality of conductor crossovers conductively connecting adjacent windings, wherein each one of the conductor crossovers comprises a first conductor and a second conductor.

11. The inductor of claim 10, wherein:

10 the outer winding is disposed adjacent to an outer middle winding and is conductively connected thereto by an outer conductor crossover; and

the inner winding is disposed adjacent to an inner middle winding and is conductively connected thereto by an inner conductor crossover;

for any given middle winding other than the outer middle winding and the inner middle winding, the given middle winding is disposed adjacent a first middle winding having a bigger size than the given middle winding, and adjacent a second middle winding having a smaller size than the given middle winding, the given middle winding being conductively connected to the first middle winding by a first conductor crossover, the given middle winding being conductively connected to the second middle winding by a second conductor crossover.

15

20 12. The inductor of claim 11, wherein:

the first portion of the outer winding is conductively connected to a second portion of the outer middle winding by a first conductor of the outer conductor crossover, and the second portion of the outer winding is conductively connected to a first portion of the outer middle winding by a second conductor of the outer conductor crossover;

25 a first portion of the inner middle winding is conductively connected to the second portion of the inner winding by a first conductor of the inner conductor crossover, and a second

portion of the inner middle winding is conductively connected to the first portion of the inner winding by a second conductor of the inner conductor crossover; and

a first portion of the given middle winding is conductively connected to a second portion of the second middle winding by a first conductor of the second conductor crossover, a second portion of the given middle winding is conductively connected to a first portion of the second middle winding by a second conductor of the second conductor crossover, the first portion of the given middle winding is conductively connected to a second portion of the first middle winding by a first conductor of the first conductor crossover, the second portion of the given middle winding is conductively connected to the first portion of the first middle winding by a second conductor of the first conductor crossover.

13. The inductor of claim 12, further comprising a first terminal and a second terminal, wherein the first terminal is conductively connected to the first portion of the outer winding, and the second terminal is conductively connected to the second portion of the outer winding.

14. The inductor of claim 13, further comprising a outer peripheral conductor, a size of the peripheral conductor being greater than the size of the outer winding, wherein the center of the outer winding and a center of the outer peripheral conductor substantially coincide, the outer peripheral conductor being disposed outwardly of the outer winding and being ohmically isolated from the outer winding within the inductor.

15. The inductor of claim 14, wherein the outer peripheral conductor has a shape which defines an open curve, the open curve having a first end point and a second end point, the peripheral conductor further comprising a first ground terminal connected to the first end point and a second ground terminal connected to the second end point.

16. The inductor of claim 15, wherein the windings have a circular shape.

17. The inductor of claim 15, wherein the windings have a polygonal shape.
18. A planer inductor comprising the inductor of claim 15, wherein the plurality of windings lie in a common plane.
- 5
19. An inductor having a plurality of windings, wherein each winding of the plurality of windings is symmetric about a center of the inductor, said plurality of windings being arranged in a common plane.
- 10 20. A method of winding an inductor, the method comprising the steps of:
providing a plurality of windings, each one of the windings having a center and said plurality of windings being generally symmetric about the center of the inductor, each one of the windings having a different size from the other windings;
disposing the windings such that the center of each one of the windings substantially coincides with the center of the other windings; and
15 conductively connecting each one of the windings to at least one adjacent winding through a conductor crossover.
21. The method of claim 20 wherein the conductor crossovers are aligned along an axis intersecting the conductor crossovers and the center of the inductor, so as to preserve a symmetry of the inductor about the axis.
- 20
22. The method of arranging windings of an inductor of claim 21, wherein the plurality of windings comprises:
an outer winding having a first portion and a second portion thereof;
25 an inner winding having a first portion and a second portion thereof, the size of the inner winding being smaller than the size of the outer winding; and

- a conductor crossover comprising a first conductor and a second conductor, the conductor crossover conductively connecting the outer winding and the inner winding;
wherein the first portion of the outer winding is conductively connected to the second portion of the inner winding by the first conductor, and the first portion of the inner winding is
5 conductively connected to the second portion of the outer winding by the second conductor.
23. The method of arranging windings of an inductor of claim 22, further comprising the steps of:
providing a first terminal and a second terminal;
10 conductively connecting the first terminal to the first portion of the outer winding; and
conductively connecting the second terminal to the second portion of the outer winding.
24. The method of arranging windings of an inductor of claim 23, further comprising the steps of:
providing a peripheral conductor, a size of the peripheral conductor being greater than the
15 size of the outer winding, and the peripheral conductor being generally symmetric.
disposing the peripheral conductor at the periphery of the outer winding, adjacent the
outer winding, such that the peripheral conductor is substantially concentric with the outer
winding.
- 20 25. The method of arranging windings of an inductor of claim 24, wherein the shape of the
peripheral conductor defines an open curve, the open curve having a first end point and a second
end point, the peripheral conductor further comprising a first ground terminal connected to the
first end point and a second ground terminal connected to the second end point.
- 25 26. The method of arranging windings of the inductor of claim 25, wherein the windings have
a generally circular shape.

27. The method of arranging windings of an inductor of claim 25, wherein the windings have a generally polygonal shape.
28. A planer inductor comprising a plurality of windings, wherein the windings are arranged according to the method of claim 25, and wherein the plurality of windings are arranged in a planar configuration.